

XP-002210008

Balanced Salt Solutions

Single Strength Solution from Powder

A. All Catalogue Numbers except Cat. No. 21300

Directions

1. Measure out 5% less water (deionised-distilled) than desired total volume of Balanced Salt Solution, using a mixing container that is as close to the final volume as possible.
2. Add powder Balanced Salt Solution to water, at 15°C-20°C (Room Temperature), with gentle stirring. Do not heat water.
3. Rinse out inside of package to remove all traces of powder.
4. Add stated quantity of NaHCO₃ per litre of medium (See table 2).
5. Dilute to desired volume with water. Stir until dissolved. (Do not over-mix).
6. Adjust pH of Balanced Salt Solution to 0.2-0.3 below desired final working pH*, use of 1N NaOH or 1N HCl is recommended. (Add slowly with stirring). After pH has been adjusted, keep container closed until Balanced Salt Solution is filtered.
7. Sterilise immediately by membrane filtration. (Air pressure system recommended).

* pH will normally rise 0.1 - 0.3 upon filtration.

B. Preparation of Dulbecco's Phosphate Buffered Saline
Cat. N . 21300

Directions

1. To a mixing container that is as close to the final volume as possible, add 5% less distilled water than the desired total volume of medium.
2. Add powdered medium (less calcium chloride) to room temperature (20°C to 30°C) water with gentle stirring. Do not heat water.
3. Rinse inside of package to remove all traces of powder. Be sure all material goes into solution before proceeding to next step.
4. Add 0.1 g of calcium chloride/L of medium.
5. Dilute the medium to the desired volume with water and stir until dissolved. Do not overmix.
6. Process the medium immediately into sterile containers by membrane filtration using a 0.2 µm filter. We recommend using a positive-pressure system.

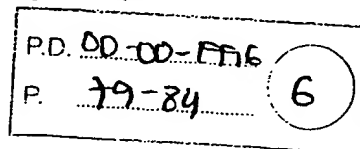














Table 2: Sodium Bicarbonate Concentration for Single Strength from Powder













Cat. No.	NaHCO ₃ **		Recommended pH 1X Solution
	g/L	ml/L 7.6% Solution	
81100	2.20	30.0	7.0-7.2
61200	0.35	5.0	7.0-7.2
11201	0.35	5.0	7.0-7.2
21300†	-	-	7.0-7.2
21116	1.00	13.3	7.0-7.2

† Formulation does not require addition of NaHCO₃

**Sodium Bicarbonate Concentration using 7.5% Sodium Bicarbonate solution Cat. No. 25080 or Sodium Bicarbonate Powder Cat. No. 11810.

Balanced Salt Solutions

		Description	Formulation	Recommended Storage Temperature	Shelf Life	Unit Size	Cat No.
	LIQUID (1X)	PBS, Dulbecco's Phosphate Buffered Saline Formula does not contain Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml	14040-08
						500 ml	14040-09
						20 × 100 ml	14040-16
						10 × 500 ml	14040-17
	LIQUID (10X)	PBS, Dulbecco's Phosphate Buffered Saline Formula does not contain Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml	14080-03
						500 ml	14080-04
	POWDER	PBS, Dulbecco's Phosphate Buffered Saline 0.1 g/L Calcium Chloride supplied separately. Formula does not contain Sodium Bicarbonate	See Page 83	+2°C to +8°C	36 months	1 L	21300-01
						5 L	21300-08
						10 L	21300-05
						50 L	21300-07
	LIQUID (1X)	PBS, Dulbecco's Phosphate Buffered Saline without Calcium without Magnesium Formula does not contain Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml	14190-19
						500 ml	14190-20
						100 ml	14190-06
						500 ml	14190-05
						20 × 100 ml	14190-18
						10 × 500 ml	14190-16
	LIQUID (10X)	PBS, Dulbecco's Phosphate Buffered Saline without Calcium without Magnesium Formula does not contain Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml	14200-05
						500 ml	14200-04
						20 × 100 ml	14200-06
						10 × 500 ml	14200-07
	LIQUID (1X)	Phosphate-Buffered Saline (PBS) pH 7.2±0.05	See Page 83	+15°C to +30°C	24 months	500 ml	20012-01
	LIQUID (1X)	Phosphate-Buffered Saline (PBS) pH 7.4±0.05	See Page 83	+15°C to +30°C	24 months	500 ml	10010-01
	LIQUID (10X)	Phosphate-Buffered Saline (PBS) pH 7.2±0.05	See Page 83	+15°C to +30°C	24 months	500 ml	70013-01
	LIQUID (10X)	Phosphate-Buffered Saline (PBS) pH 7.4±0.05	See Page 83	+15°C to +30°C	24 months	500 ml	70011-01
	LIQUID (1X)	EBSS, Earle's Balanced Salt Solution	See Page 83	+15°C to +30°C	24 months	100 ml	24010-01
						500 ml	24010-02
	LIQUID (10X)	EBSS, Earle's Balanced Salt Solution without Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml	14050-01
						500 ml	14050-02
	POWDER	EBSS, Earle's Balanced Salt Solution without Sodium Bicarbonate	See Page 83	+2°C to +8°C	36 months	1 L	81100-01
						5 L	81100-02
						10 L	81100-03
						50 L	81100-04

	Description	Formulation	Recommended Storage Temperature	Shelf Life	Unit Size	Cat No.
 LIQUID (1X)	EBSS, Earle's Balanced Salt Solution without Phenol Red	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14015-036 14015-044
 LIQUID (10X)	EBSS, Earle's Balanced Salt Solution without Phenol Red without Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14055-032 14055-040
 LIQUID (1X)	EBSS, Earle's Balanced Salt Solution without Calcium without Magnesium	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14150-031 14150-049
 LIQUID (10X)	EBSS, Earle's Balanced Salt Solution without Calcium without Magnesium without Sodium Bicarbonate	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14160-030 14160-048
 LIQUID (1X)	EBSS, Earle's Balanced Salt Solution without Calcium without Magnesium without Phenol Red	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14155-030 14155-048
 LIQUID (10X)	EBSS, Earle's Balanced Salt Solution	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	14165-013 14165-021
 LIQUID (1X)	GBSS, Gey's Balanced Salt Solution (FOR TUBES) with 7000 mg/L NaCl with 2270 mg/L NaHCO ₃	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	54030-010 54030-028
 LIQUID (1X)	GBSS, Gey's Balanced Salt Solution (FOR SLIDES) with 8000 mg/L NaCl with 227 mg/L NaHCO ₃	See Page 83	+15°C to +30°C	24 months	100 ml 500 ml	24260-010 24260-028
 LIQUID (1X)	HBSS, Hanks' Balanced Salt Solution	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml 20 x 100 ml 10 x 500 ml	24020-083 24020-091 24020-141 ● 24020-133 ●
 LIQUID (10X)	HBSS, Hanks' Balanced Salt Solution without Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14060-032 14060-040
 POWDER	HBSS, Hanks' Balanced Salt Solution without Sodium Bicarbonate	See Page 84	+2°C to +8°C	36 months	1 L 5 L 10 L 50 L	61200-028 61200-069 61200-093 61200-088
 LIQUID (1X)	HBSS, Hanks' Balanced Salt Solution without Phenol Red	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14025-043 14025-050

● easy-pack

	Description	Formulation	Recommended Storage Temperature	Shelf Life	Unit Size	Cat No.
 LIQUID (10X)	HBSS, Hanks' Balanced Salt Solution without Phenol Red without Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14065-031 14065-049
 POWDER	HBSS, Hanks' Balanced Salt Solution without Phenol Red without Sodium Bicarbonate	See Page 84	+2°C to +8°C	36 months	1 L 5 L 10 L 50 L	11201-019 11201-035 11201-100 11201-084
 LIQUID (1X)	HBSS, Hanks' Balanced Salt Solution without Calcium without Magnesium	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml 20 x 100 ml 10 x 500 ml	14170-070 14170-088 14170-146 ● 14170-138 ●
 LIQUID (10X)	HBSS, Hanks' Balanced Salt Solution without Calcium without Magnesium without Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14180-038 14180-046
 LIQUID (1X)	HBSS, Hanks' Balanced Salt Solution without Calcium without Magnesium without Phenol Red	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14175-046 14175-053
 LIQUID (10X)	HBSS, Hanks' Balanced Salt Solution without Calcium without Magnesium without Phenol Red without Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14185-037 14185-045
 LIQUID (1X)	PSA, Puck's Saline A	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14210-033 14210-041
 LIQUID (10X)	PSA, Puck's Saline A without Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	24220-014 24220-022
 LIQUID (1X)	PSG, Puck's Saline G Formula does not contain Sodium Bicarbonate	See Page 84	+15°C to +30°C	24 months	100 ml 500 ml	14100-036 14100-044
 POWDER	Tyrode's Salt Solution without Sodium Bicarbonate	See Page 84	+2°C to +8°C	36 months	1 L 5 L 10 L 50 L	21116-017 21116-025 21116-033 21116-041

Dulbecco's Phosphate-Buffered Saline (PBS)¹

Cat. No	14040 1X Liquid	14080 10X Liquid	21300 Powder	14190 1X Liquid	14200 10X Liquid
Component	g/L	g/L	g/L	g/L	g/L
INORGANIC SALTS:					
CaCl ₂ (anhyd.)	-	1.00	a	-	-
CaCl ₂ · 2H ₂ O	0.132	-	-	-	-
KCl	0.20	2.00	0.20	0.20	2.00
KH ₂ PO ₄	0.20	2.00	0.20	0.20	2.00
MgCl ₂ (anhyd.)	-	-	0.049	-	-
MgCl ₂ · 6H ₂ O	0.10	1.00	-	-	-
NaCl	8.00	80.00	8.00	8.00	80.00
Na ₂ HPO ₄	1.15	-	1.15	1.15	-
Na ₂ HPO ₄ · 7H ₂ O	-	21.60	-	-	21.60

References:

1. *J. Exp. Med.* (1954) 98, 167.

a. Supplied separately at 0.1 g/L

Phosphate-Buffered Saline (PBS)¹

Cat. No	20012 1X Liquid	10010 1X Liquid	70013 10X Liquid	70011 10X Liquid
Component	g/L	g/L	g/L	g/L
INORGANIC SALTS:				
KH ₂ PO ₄	0.21	0.144	2.10	1.44
NaCl	9.00	9.00	90.00	90.00
Na ₂ HPO ₄ · 7H ₂ O	0.726	0.795	7.26	7.95

Gey's Balanced Salt Solutions (GBSS)

Cat. No	54030 1X Liquid	24260 1X Liquid
Component	g/L	g/L
INORGANIC SALTS:		
CaCl ₂ · 2H ₂ O	0.22	0.22
KCl	0.37	0.37
KH ₂ PO ₄	-	0.03
MgCl ₂ · 6H ₂ O	0.21	0.21
MgSO ₄ · 7H ₂ O	0.07	0.07
NaCl	7.00	8.00
NaHCO ₃	2.27	0.227
Na ₂ HPO ₄	0.12	0.12
NaH ₂ PO ₄ · H ₂ O	0.03	-
OTHER COMPONENTS:		
D-Glucose	1.00	1.00

References:

1. *Amer. J. of Cancer* (1936) 27:55.Earle's Balanced Salt Solutions (EBSS)²

Cat. No	24010 1X Liquid	14050 10X Liquid	81100 Powder	14015 1X Liquid	14055 10X Liquid	14150 1X Liquid	14160 10X Liquid	14155 1X Liquid	14165 10X Liquid
Component	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
INORGANIC SALTS:									
CaCl ₂ (anhyd.)	0.20	2.00	0.20	-	2.00	-	-	-	-
CaCl ₂ · 2H ₂ O	-	-	-	0.264	-	-	-	-	-
KCl	0.40	4.00	0.40	0.40	4.00	0.40	4.00	0.40	4.00
MgSO ₄ (anhyd.)	-	-	0.0977	-	-	-	-	-	-
MgSO ₄ · 7H ₂ O	0.20	2.00	-	0.20	2.00	-	-	-	-
NaCl	6.80	68.00	6.80	6.80	68.00	6.80	68.00	6.80	68.00
NaHCO ₃	2.20	-	-	2.20	-	2.20	-	2.20	-
NaH ₂ PO ₄ · H ₂ O*	-	1.40	0.14	-	1.40	-	1.40	-	-
NaH ₂ PO ₄ · 2H ₂ O	0.158	-	-	0.158	-	0.158	-	0.158	1.58
OTHER COMPONENTS:									
D-Glucose	1.00	10.00	1.00	1.00	10.00	1.00	10.00	1.00	10.00
Phenol Red	0.01	0.10	0.01	-	-	0.01	0.10	-	-

References:

2. *J. Nat. Cancer Inst.* (1943) 4, 167.* Original formulation calls for 150.0 mg/L NaH₂PO₄ · 2H₂O. *In vitro* (1974) 9:6.

Hanks' Balanced Salt Solutions (HBSS)²

Cat. No	24020 1X Liquid	14060 10X Liquid	61200 Powder	14025 1X Liquid	14065 10X Liquid	11201 Powder	14170 1X Liquid	14180 10X Liquid	14175 1X Liquid	14185 10X Liquid
Component	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L	g/L
INORGANIC SALTS:										
CaCl ₂ (anhyd.)	-	1.40	0.14	-	1.40	0.14	-	-	-	-
CaCl ₂ · 2H ₂ O	0.185	-	-	0.185	-	-	-	-	-	-
KCl	0.40	4.00	0.40	0.40	4.00	0.40	0.40	4.00	0.40	4.00
KH ₂ PO ₄	0.06	0.60	0.06	0.06	0.60	0.06	0.06	0.60	0.06	0.60
MgCl ₂ · 6H ₂ O ^a	0.10	1.00	-	0.10	1.00	-	-	-	-	-
MgSO ₄ (anhyd.)	-	-	0.09767	-	-	0.09767	-	-	-	-
MgSO ₄ · 7H ₂ O	0.10	1.00	-	0.10	1.00	-	-	-	-	-
NaCl	8.00	80.00	8.00	8.00	80.00	8.00	8.00	80.00	8.00	80.00
NaHCO ₃	0.35	-	-	0.35	-	-	0.35	-	0.35	-
Na ₂ HPO ₄	0.48	-	0.04788	0.048	-	0.04788	0.048	-	0.048	-
Na ₂ HPO ₄ · 7H ₂ O ^b	-	0.90	-	-	0.90	-	-	0.90	-	0.90
OTHER COMPONENTS:										
D-Glucose	1.00	10.00	1.00	1.00	10.00	1.00	1.00	10.00	1.00	10.00
Phenol Red ^c	0.01	0.10	0.01	-	-	-	0.01	0.10	-	-

References:

2. *Proc. Soc. Exp. Biol. Med.* (1949) 71, 196. Modification - National Institutes of Health

a. MgCl₂ · 6H₂O added to original formula.

b. Original formulation calls for 0.06 g/L Na₂HPO₄ · 2H₂O. *Proc. Soc. Exp. Biol. Med.* (1949) 71.

c. Original formulation calls for 0.02 g/L. *Proc. Soc. Exp. Biol. Med.* (1949) 71.

Puck's Salines: A¹, G²

Cat. No	14210 1X Liquid	24220 10X Liquid	14100 1X Liquid
Component	g/L	g/L	g/L
INORGANIC SALTS:			
CaCl ₂ · 2H ₂ O	-	-	0.016
KCl	0.40	4.00	0.40
KH ₂ PO ₄	-	-	0.15
MgSO ₄ · 7H ₂ O	-	-	0.154
NaCl	8.00	80.00	8.00
NaHCO ₃	0.35	3.50	-
Na ₂ HPO ₄ · 7H ₂ O	-	-	0.154
OTHER COMPONENTS:			
D-Glucose	1.00	10.00	1.10
Phenol Red	0.005	0.05	0.005

References:

1. *J. Exp. Med.* (1957) 106, 145.

2. Puck, T. T., Cieciura, S. J. and Robinson, A. (1958) *J. Exp. Med.* 108, 945.

Tyrode's Salt Solution³

Cat. No	21116 Powder
Component	g/L
INORGANIC SALTS:	
CaCl ₂ (anhyd.)	0.20
KCl	0.20
MgCl ₂ (anhyd.)	0.0469
NaCl	8.00
NaH ₂ PO ₄ · H ₂ O	0.05
OTHER COMPONENTS:	
D-Glucose	1.00

References:

3. Tyrode, M. V., *Arch. Intern. Pharmacodyn.*, 20:205 (1910)